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There is a wide scope for any nurse at home who does not look for financial remuneration nor for easy work, but who is glad to follow in the footsteps of Florence Nightingale and above all in the footsteps of Him who went about healing the people.

ELECTROTHERAPY, A NEW AND INTERESTING FIELD FOR NURSES

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Electrotherapy is now being developed in a number of our larger hospitals and is showing excellent results. No one could be better suited to be a doctor's able assistant in this line of work than a well trained nurse. Because of her knowledge of anatomy, physiology and chemistry she has a good foundation for the study of electrotherapy and later can apply it intelligently and effectively. In the hands of the doctor, electrotherapy has been elevated to a science where it rightfully belongs and it would seem almost a duty for the medical profession to develop it to its fullest extent for the benefit of mankind. That much good can be done by it is proven by the fact that the so called "quacks" have richly commercialized it.

What is electricity? It has been defined as ether waves in a state of unrest. There are a number of definitions that have been given, many confusing and elusive to the average mind. What does electricity do and how are these results brought about? Seeing is believing. Let us consider a simple example of the action of electricity on water. Water, as we know, is composed of hydrogen two atoms, oxygen one atom. If we place the positive and negative poles of the simple galvanic battery in a basin of water we shall soon see small bubbles collecting around the positive pole and large bubbles around the negative pole. The electricity passing from the positive to the negative pole has separated the oxygen from the hydrogen. The oxygen having an affinity for the positive pole is collected around that pole and is discharged by means of oxygen bubbles; while the hydrogen, having an affinity for the negative pole, is collected around that pole and is discharged by means of the hydrogen bubbles. If we will allow the two poles to remain in the water long enough, the continued action of the electricity will completely separate the simple elements of oxygen and hydrogen and no water will be left. This action of electricity on water is known as electrolysis. These properties of electricity are made use of in medicine to introduce medication into the body through the skin and underlying tissues, this process is known as ionization. There are some skeptical persons who doubt the possibility of this property of electricity. Here is a good example: take a cloth saturated in a solution of strychnine sulphate and envelop the body of a frog. The frog will remain passive, but if the positive pole of the galvanic current is applied over the area covered with the solution and the negative pole on the leg, the frog will have tetanic convulsions in a few minutes.

The electric current has different effects depending on the apparatus used. We find that it has both a mechanical and a chemical action. The Faradic current is used to produce mechanical action causing contraction of the muscles. In constipation, paralysis, or any condition where muscle stimulation is needed, it has been found beneficial. The galvanic current has a chemical action and is the only current whose action is different at the two poles. Oxygen is liberated at the positive pole and an acid reaction is produced. Hydrogen is liberated at the negative pole and an alkaline reaction is produced. The positive pole causes the formation of a hard scab, has antiseptic properties, and causes vaso-constriction; the negative pole causes the formation of a soft scab, has no antiseptic properties, and causes vaso-dilatation. The positive pole has a sedative effect and is therefore used in painful conditions, it is also used to reduce inflammation because of its vaso-constricting nature, while the negative pole is used to bring about congestion. The high frequency current is a type of electric current which has a thermic effect, that is, it produces heat. With this current we can produce a small amount of heat sufficient to warm the tissues slightly or enough heat to cause actual destruction of the tissues. Heat may be applied superficially to the tissue or indirectly to the internal organs, when ordered, as to a sluggish liver, a badly functionating kidney or an inflamed appendix. An active hyperemia can be brought about by this means, which helps to restore normal conditions.

In November, 1918, a patient came for treatment who had a cancerous condition of the mouth. The doctor in charge of the department used the electro coagulation method on the affected area and completely coagulated the cancerous tissue. The dead substance was removed with a curette. No bleeding followed, as electro thermic coagulation immediately causes cessation of surface hemorrhage, but the patient was watched for symptoms of secondary hemorrhage which sometimes occurs. The patient was advised to keep the mouth cleansed with an antiseptic solution, but further treatment was not necessary. At the present time, after the lapse of sixteen months, the patient's mouth is in a healthy condition and no recurrence of the cancer has taken place. Several cases of epithelioma that were treated unsuccessfully for many months by the X-ray showed very satisfactory results after one treatment by electrotherapy. While X-ray has proven to be very beneficial in a majority of cancerous conditions, there are certain cases which do better under electrotherapeutic treatment. Deep seated cancers are not treated by this method, but are referred to the surgeon.

An interesting case is that of a young woman, twenty-one years old, who has had Bell's palsy from infancy and has suffered a great deal of embarrassment from this unfortunate disfigurement. She is receiving three treatments weekly of negative galvanism to the affected muscles. At the end of three months of treatment, her mouth is straighter and she has more power in all of the relaxed facial muscles. Cases in which the condition is not so long standing respond more readily to treatment and some have been cured in three weeks.

Another interesting and remarkable case is that of a young woman, who, when the war broke out, wishing to show her patriotism in a practical way, volunteered to serve in a munition plant. While working at a machine, filling shells, one of them exploded and she was severely burned about the face, neck, chest, left shoulder, and arm. She was a patient in the hospital for three months and after her burns had healed she was referred to the electrotherapeutic department for treatment. At that time her arm was bound to the body by adhesions and her head was drawn toward the shoulder, due to scar tissue which so restricted the muscles that there was no movement of the head and arm. The treatment in this case was radiant light followed by chlorine ionization. When chlorine ionization is used, a pad which has been immersed in normal salt solution is placed over the part to be treated; the negative pole of the galvanic battery is then attached to the pad and the positive pole applied to an indifferent part of the body. As chlorine has an affinity for the positive pole, it travels from the negative pole through the tissues toward the positive pole. The chlorine ions have the power to soften fibrous and scar tissue, which makes it more amenable to partial or total absorption and stretching. As massage supplements and accelerates this process, the patient was therefore given massage and passive movement. As soon as she acquired more freedom of motion of both head and arm, she was advised and encouraged to exercise the parts as actively as possible. She has been under treatment for fourteen months and at the present time the arm has been restored to its full function and the head is but very little restricted in its movements. Cases of this type are very tedious and try very much the patience of both the patient and the operator, but the results are very gratifying and are worth all the time and trouble expended.